REMARKS

Reconsideration of this application is requested. Claims 1-5 remain active in the application subsequent to entry of this amendment.

Claim 1 is amended responsive to the examiner's comments in items 1 and 2 of the Official Action. The balance of the Official Action relates to two prior art-based rejections, one directed to the product claims and the other directed to the process claims. Applicants respond relying on the comparative evidence contained in the application as filed as well as the deficiencies of the references themselves.

Claims 1-3 directed to heat-resistant glass fiber are rejected as being "obvious" over Eastes US '329.

The heat-resistant glass fiber of the present invention has a composition comprising, by weight %, 56 to 58.5% of SiO_2, 12 to 17% of Al_2O_3, 16 to 27% of CaO, 1 to 9% of MgO, 0 to 1% of Na_2O and 0 to 1% of K_2O as the entirety of the fiber. The fiber contains neither B_2O_3 nor F_2, and *has a surface layer portion made of a silicic glass having an SiO_2 content of at least 90% by weight.*

As described in section [0035] of the present specification, the heat-resistant glass fiber of the present invention has *excellent heat resistance*, can be easily spun and can be suitably used as an acoustic material for use in an automobile muffler where an exhaust gas has a temperature of 850°C or higher.

In contrast to the glass fiber disclosed in the Eastes et al reference (U.S. 5,789,329, to be discussed later), particularly, the advantageous technical effect of the glass fiber of the present invention is excellent heat resistance. This excellent heat resistance is accomplished as follows: As described in section [0010] of the present specification, the upper limit/content of SiO_2 is set at 58.5% by weight, so that the acid treatment is made easier and that a surface layer portion resulting from the acid treatment having a high SiO_2 content for imparting the glass fiber with heat resistance is increased in thickness, whereby the fiber is imparted with excellent heat resistance.

As shown in Table 1 of the present specification, the glass fibers of Examples 1 to 5 prepared according to the present invention, have excellent acid treatment properties, the thickness of a surface layer portion each is as large as 0.64 to 0.98 μm, and the heat resistance of the glass fibers is ranked at AA (a fiber nearly retains its flexibility; see also page 9 of the specification). The glass fibers of Examples 1 to 5 thus have excellent heat resistance.

In contrast, while the glass fiber described in the Eastes et al reference contains SiO_2, Al_2O_3, CaO, MgO and Na_2O as essential components, the glass composition of the glass fiber of the Eastes et al reference differs from the glass composition in the present invention in that the content of the SiO_2 in the glass fiber of the Eastes et al reference is high, as high as 59.0 to 62.0% by weight, as compared with the content of SiO_2 in the present invention. Since the content of SiO_2 is as large as 59.0 to 62.0% by weight in the glass composition of the Eastes et al reference, it is difficult to conveniently carry out the acid treatment for forming an SiO_2-rich surface layer portion. Further, the thickness of the SiO_2-rich surface layer portion is small, so that the glass fiber of the Eastes et al reference cannot be imparted with sufficient heat resistance.

These observations are supported by Comparative Example[1] 2 and 3 shown in Table 2 of the present specification. That is, the compositions of the glasses in Comparative Examples 2 (SiO_2 content 59.0 wt%) and Comparative Example 3 (SiO_2 content 60.0 wt%) are included in the composition of the glass described in the Eastes et al reference. Since, however, these glasses are poor in acid treatment properties, the thickness of surface layer portion is very small, as small as only 0.02 μm (Comparative Example 2) and 0.04 μm (Comparative Example 3) – both of these glass fibers are ranked at C (Fibers are fused and deformed) in the same heat resistance test.

[1] The results presented in the original specification accompanied by the executed declaration signed by the inventors would have significant evidentiary weight, comparable to the weight given to an executed declaration. The results presented in the original declaration are not mere arguments, as alleged by the examiner. It is well established by the Federal Circuit that "the examiner must consider comparative data presented in the specification which is intended to illustrate the claimed invention in reaching a conclusion in regard to the obviousness of claims." *In re Margolis*, 785 F.2d 1029, 228 U.S.P.Q. 1123, 1129 (Fed. Cir. 1993).

The Eastes et al reference does not disclose that their glass fiber is treated with an acid to form a surface layer portion having a high SiO_2 content thereby to impart the glass fiber with heat resistance. And, even if the glass composition of the Eastes et al reference is treated with an acid, the result still will not meet the claims of the present application, namely the thus-formed surface layer portion having a high SiO_2 content has a small thickness, so that the glass fiber cannot be imparted with high heat resistance.

For reasons discussed in detail above including comparative evidence in applicants' specification, claims 1-3 are not "obvious" over the disclosures of the Eastes et al reference and are patentable.

Process claims 4-5 are rejected as "obvious" over Eastes et al reference in view of JP-A-147975.

The Eastes et al reference is discussed above.

Japanese publication (JP-A-147975), applied as a secondary reference, discloses acid treatment of a glass composition. The Official Action argues it would be apparent to apply the acid treatment disclosed in Japanese publication to the glass composition disclosed in the Eastes et al reference. However, even if the acid treatment disclosed in Japanese publication is applied to the glass fiber disclosed in the Eastes et al reference, the heat resistance of the glass fiber cannot be improved, since the glass of the Eastes et al reference has a high SiO_2 content (59.0 to 61.0 wt%). Thus assuming *arguendo* the Eastes' fibers are subjected to an acid treatment, the requirements of the present invention would still not be obtained.

The processes defined in claims 3-4 provides a glass fiber having improved heat resistance by acid-treating a glass fiber having an SiO_2 content whose upper limit is no more than 58.5% by weight. Therefore, claims 3 and 4 are not suggested from the Eastes et al reference in view of Japanese publication.

For the above reasons it is respectfully submitted that the claims of this application are in condition for allowance. If this response does not place the claims in condition for allowance the examiner is urged to contact the undersigned by telephone in order to further discuss any issues that may remain. Favorable action is solicited.

Attached hereto is a marked-up version of the changes made to the claim by the current amendment. The attached page is captioned "**Version With Markings To Show Changes Made.**"

Respectfully submitted,

NIXON & VANDERHYE P.C.

By: _____
Arthur R. Crawford
Reg. No. 25,327

ARC:eaw
1100 North Glebe Road, 8th Floor
Arlington, VA 22201-4714
Telephone: (703) 816-4000
Facsimile: (703) 816-4100

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS

1. (Amended) A heat-resistant glass fiber which has a composition comprising, [substantially] by weight %, 56 to 58.5% of SiO_2, 12 to 17% of Al_2O_3, 16 to 27% of CaO, 1 to 9% of MgO, 0 to 1% of Na_2O and 0 to 1% of K_2O as the entirety of the fiber and containing neither B_2O_3 nor F_2, and which has a surface layer portion made of a silicic glass having an SiO_2 content of at least 90% by weight.